



## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference M/43148-PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP2003/005174	International filing date (day/month/year) 16 May 2003 (16.05.2003)	Priority date (day/month/year) 17 May 2002 (17.05.2002)
International Patent Classification (IPC) or national classification and IPC F01P 11/06		
Applicant BASF AKTIENGESELLSCHAFT		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I  Basis of the report
- II  Priority
- III  Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV  Lack of unity of invention
- V  Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI  Certain documents cited
- VII  Certain defects in the international application
- VIII  Certain observations on the international application

Date of submission of the demand 16 December 2003 (16.12.2003)	Date of completion of this report 15 July 2004 (15.07.04)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

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International application No.

PCT/EP2003/005174

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

 the international application as originally filed the description:pages 1-11, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_ the claims:pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, as amended (together with any statement under Article 19)  
pages \_\_\_\_\_, filed with the demand  
pages 1-10, filed with the letter of 05 July 2004 (05.07.04) the drawings:pages 1/1, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_ the sequence listing part of the description:pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

 the language of a translation furnished for the purposes of international search (under Rule 23.1(b)). the language of publication of the international application (under Rule 48.3(b)). the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

 contained in the international application in written form. filed together with the international application in computer readable form. furnished subsequently to this Authority in written form. furnished subsequently to this Authority in computer readable form. The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished. The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4.  The amendments have resulted in the cancellation of: the description, pages \_\_\_\_\_ the claims, Nos. \_\_\_\_\_ the drawings, sheets/fig \_\_\_\_\_5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	1-10	YES
	Claims		NO
Inventive step (IS)	Claims	8	YES
	Claims	1-7, 9, 10	NO
Industrial applicability (IA)	Claims	1-10	YES
	Claims		NO

## 2. Citations and explanations

1. This report makes reference to the following documents:

D1: GB 1 168 480 A

D2: PATENT ABSTRACTS OF JAPAN, Vol. 018, No. 360  
(M-1634) & JP 06 093 856 A

D3: WO 02 08354 A

2. Document D3 describes a method for cooling an internal combustion engine, in which a liquid coolant containing non-ionic corrosion inhibitors is made to circulate in a coolant circuit in thermal contact with the internal combustion engine.

The subject matter of claim 1 differs from the known method in that the liquid coolant is de-ionised at least intermittently, thus removing corrosive ionic decomposition products produced in operation even in non-ionic coolant compositions.

D1 and D2 describe methods for cooling internal combustion engines with parts made of magnesium, light metals (such as aluminium) or light metal alloys. D1 proposes de-ionising the coolant (see

page 2, lines 62-69) in order to remove the ionic decomposition products produced in operation in non-ionic liquid coolants. D2 also describes this de-ionisation (see the last two lines of the abstract). Since both D1 and D2 describe the same advantages of the differentiating feature as the present application, a person skilled in the art would consider the inclusion of this feature in the method described in D3 a conventional measure for solving the problem addressed.

Document D1 (see page 1, lines 12-79; page 2, lines 46-74; and figure 1) describes a liquid-cooled internal combustion engine having at least one combustion engine (E) and at least one coolant circuit containing a liquid coolant, a de-ionisation system (D) for the liquid coolant being arranged in the coolant circuit, which is at least in part in thermal contact with the internal combustion engine (E).

The subject matter of claim 6 differs from the known internal combustion engine only in that the liquid coolant comprises non-ionic corrosion inhibitors. This ensures very good protection against corrosion in engines with parts made of magnesium, aluminium or its alloys.

Document D3 describes the same advantages of the differentiating feature as the present application. A person skilled in the art would therefore consider the inclusion of this feature in the internal combustion engine described in D1 a conventional measure for solving the problem in question, since D1 explains that the de-ionisation system can also

be used with non-ionic liquid coolants in order to remove the ionic decomposition products produced in operation.

Consequently, the present application does not meet the requirement of PCT Article 33(3) because the subject matter of claims 1 and 6 does not involve an inventive step.

3. The additional features of claims 2-5, 7, 9 and 10 are known from D1 (claims 3 and 7), D3 (claim 2) or US 2002/0 017 491 A (claims 5, 9 and 10), or are only some of many obvious possibilities (claim 4) from which a person skilled in the art would select according to the circumstances in order to solve the problem addressed, without being inventive.

Consequently, dependent claims 2-5, 7, 9 and 10 do not appear to contain any features which, in combination with the features of any claim to which they refer, would meet the PCT inventive step requirements.

4. The combination of features contained in dependent claim 8 is neither known from nor suggested by the available prior art.

Consequently, claim 8 appears to meet the requirements of PCT Article 33(2), (3) and (4) in relation to the searched prior art.

5. Observations

5.1 Independent claims 1 and 6 have not been drafted in the two-part form defined by PCT Rule 6.3(b). However, in the present case the two-part form would

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appear to be appropriate. Accordingly, the features known in combination from the prior art (documents D3 or D1) should have been placed in the preamble (PCT Rule 6.3(b)(i)) and the remaining features specified in the characterising part (PCT Rule 6.3(b)(ii)).

- 5.2 Contrary to PCT Rule 5.1(a)(ii), the description does not cite document D1 or indicate the relevant prior art disclosed therein.
- 5.3 Contrary to PCT Rule 5.1(a)(iii), the description is not in line with the claims.